

University of Arkansas: Getting to the Core - Grades 3-5 Partnership

The *University of Arkansas: Getting to the Core – Grades 3-4 Partnership* is a partnership comprised of 40 teachers from school districts in Northwest Arkansas, faculty from the Department of Mathematical Sciences and College of Education and Health Professions at the University of Arkansas (UA), and the Northwest Arkansas Education Services Cooperative (NWAESC). The goals of the partnership are:

- 1) To improve teachers' content knowledge and pedagogical content knowledge with respect to the mathematics that comprise the grades 3-5 content in the Common Cores State Standards for mathematics;
- 2) To increase student achievement in mathematics across the various strands, including Number and Operations, Algebra, Geometry, Measurement and Data; and
- 3) To impact teacher practice by emphasizing and exploring student-centered methods of instruction.

The focus of year 1 of the project (2011-2012) was Whole number/base 10 operations and algebraic reasoning. The focus of professional development for year 2 (2012-2013) is fractions and multiplicative reasoning. The professional development model is based on the latest research on how students think about and process these mathematical concepts and is being led by leading researchers in the field of mathematics education. Summer workshops and school-year follow-up workshops, including classroom-embedded professional development, have been and will be used for content delivery. The content of the summer workshops will focus on students' informal approaches to solving problems across the mathematical areas under study each summer as well as their connections to more abstract concepts and procedures. Problem types and related areas under investigation will be explored in detail as well as anticipated trajectories of students' progression of strategies from these initial starting points. Teachers have been and will also be engaged with ideas regarding how the Standards for Mathematical Practice in CCSS can be incorporated in mathematical lessons and how these skills can be developed in students. The year 2 focus on fractions and multiplicative reasoning is of particular importance to students as the transition from additive to multiplicative thinking often is a challenging point in students' mathematical education and is critical for later learning of algebra. In year 2, the project will conduct three school-year sessions and culminate in an eight-day workshop during summer 2013.

The evaluation plan for year 2 (2012-2013) will consist of both quantitative and qualitative measures of student achievement and teacher content knowledge concerning the topics and strands that comprise the grades 3-5 curriculum in CCSS. Teachers will also be surveyed throughout the project to gauge their perceptions and attitudes about the project. The LMT assessment for teacher content knowledge was used in year 1 and will also be used in year 2 (2012-2013). In addition, the Fraction and Proportion Thinking Inventory (Kent, 2007) will be used to measure partner and control teachers' understanding of student thinking in the realm of fractions. Student achievement data will be collected from all partner and control teachers. In addition, new partner teachers will be observed using the RTOP to capture teacher practice in the classroom.